

CLAIMS

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I Claim:

1. An extrusion die assembly constructed to process a stream of flowing plastic from an upstream inlet to a downstream outlet, said inlet and outlet being displaced
10 longitudinally along an axis of said assembly, said extrusion die assembly comprising:

15 a die body having a first bore extending longitudinally from the upstream to the downstream end of the assembly and an inlet constructed in the die body for receiving flowing plastic, said first bore also being constructed having a recess at the downstream end;

20 a tip element positioned within and coextensive with the first bore in alignment with the axis of the assembly, said tip element being constructed having a second bore extending longitudinally from the upstream end to the downstream end of said tip element to provide a passage for the processing of an elongated product;

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a die assembled within the recess of the first bore, said die operatively associated with the tip to form the downstream outlet;

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a passage, formed by the cooperation of the die body, tip, and die, for distributing the flow of plastic from said inlet to said outlet;

an adjustment mechanism constructed in the assembly to provide relative motion between the die body and the die, said mechanism allowing the adjustment of the outlet to compensate for inaccuracies in the relative positioning of the die with respect to the tip and thereby enabling the deposition of a uniform layer on the product; said mechanism comprising:

an upstream seat element positioned in the recess of the die body, said upstream seat element constructed with a first surface having at least a partially spherical shape, said spherical shape having a radius of curvature with a center;

a downstream seat element constructed for assembly with said upstream seat element, said downstream seat element constructed with a second surface having at least a partially spherical shape, said spherical shape having a radius of curvature with a center, wherein, when assembled said second surface forms at least a partial continuation of said first surface to form a seat surface;

a third surface constructed on said die, said second surface having at least a partially spherical shape, said spherical shape having a radius of curvature with a center,

said seat surface and said third surface being concentrically engaged at a mutual spherical interface positioned upstream and downstream of said center, said surfaces operatively cooperating

to allow the die to pivot relative to the die body
about said center of said radius of curvature;

an attachment mechanism constructed to secure
said first and second seat elements in the
assembled position surrounding said third surface,
said mechanism further constructed to limit the
movement of said first and second seat elements
towards said third surface in order to prevent
binding of said seat surface and said third surface
in the assembled position; and

an actuator constructed in the extrusion die
assembly to exert a force on the die at a position
downstream from the center of said radius of
curvature of said first and second surfaces to
cause movement between said surfaces and pivot the
die to adjust the relative position of the die with
respect to the tip.

2. An extrusion die assembly constructed to process a
stream of flowing plastic from an upstream inlet to a
downstream outlet, said inlet and outlet being displaced
longitudinally along an axis of said assembly, said extrusion
die assembly, as described in claim 1, wherein said attachment
mechanism comprises at least one screw in threaded engagement
between said first and second seat elements, said threaded
engagement being restricted to limit movement of said seat
elements into engagement.

3. An extrusion die assembly constructed to process a
stream of flowing plastic from an upstream inlet to a
downstream outlet, said inlet and outlet being displaced

longitudinally along an axis of said assembly, said extrusion die assembly, as described in claim 1, wherein said attachment mechanism provides a predetermined clearance between said seat elements.

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4. Apparatus for adjusting the relative position of a die in an extrusion die assembly having an inlet and an outlet, wherein the configuration of the outlet is adjustable, said apparatus comprising:

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an upstream seat element positioned in the recess of the die body, said upstream seat element constructed with a first surface having at least a partially spherical shape, said spherical shape having a radius of curvature with a center;

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a downstream seat element constructed for assembly with said upstream seat element, said downstream seat element constructed with a second surface having at least a partially spherical shape, said spherical shape having a radius of curvature with a center, wherein, when assembled said second surface forms at least a partial continuation of said first surface to form a seat surface;

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a third surface constructed on said die, said second surface having at least a partially spherical shape, said spherical shape having a radius of curvature with a center,

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said seat surface and said third surface being concentrically engaged at a mutual spherical interface positioned upstream and downstream of said center, said

surfaces operatively cooperating to allow the die to pivot relative to the die body about said center of said radius of curvature;

5 an adjustment mechanism constructed in the extrusion die assembly to exert a force on the die at a position downstream from the center of said radius of curvature of said first and second surfaces to cause movement between said surfaces and pivot the die to adjust the relative
10 position of the die within the outlet.

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15 5. Apparatus for adjusting the relative position of a die in an extrusion die assembly having an inlet and an outlet, wherein the configuration of the outlet is adjustable, as described in claim 4, wherein said attachment mechanism comprises at least one screw in threaded engagement between said first and second seat elements, said threaded engagement being restricted to limit movement of said seat elements into engagement.

20 6. Apparatus for adjusting the relative position of a die in an extrusion die assembly having an inlet and an outlet, wherein the configuration of the outlet is adjustable, as described in claim 4, wherein said attachment mechanism
25 provides a predetermined clearance between said seat elements.